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Mycelium forming oogonia was brought into a 5 per cent. solution of cane sugar, in which it grew for a few days and produced many fructifications. After six days it remained stationary. The cultures in 15 per cent. sugar solution were poor, and developed what seemed to be a yeast form. Conidia-forming mycelium was also grown in a 5 per cent. sugar solution, and produced for a few days many conidia, the swarm spores of which germinated with long germ tubes.

Agar-agar was mixed with peptone gelatin and leaf decoction (tobacco presumably) in "various ways," but without success. Author does not give the different proportions.

Some mycelium was put on the surface of sterilized potato slices, on which it grew fairly well. The tissue penetrated by the fungus turned red, the starch disappeared, and the cell walls became mucilaginous. The fungus grew intra-cellular, but died after a few days. This culture succeeded best when kept in the dark. The author does not state whether the potato was sterilized by steam or by chemicals.

The relations of the parasite to drying and to darkness were studied. Darkness was found to be generally advantageous to it.

The mycelium and conidia are unable to withstand the least drying. The oospores, however, are more resistant, but succumb to constant drying for 14 days, or when the leaves containing them were subjected to a hot sun bath for five hours on two successive days.

Extensive experiments were conducted in order to combat the disease. It was found that by the free admission of light and air to the seed beds, together with liberal spraying with Bordeaux mixture every five days, or after heavy rains and during damp weather, the fungus could be held in check. Where such measures were taken the tobacco beds were comparatively free from the disease.—A. J. Pieters.

ZOOLOGY.

On the Occurrence of Filaroides mustelarum van Ben. in American Skunks.—Through the kindness of Mr. Gerrit S. Miller, Jr., I have recently had the opportunity of examining a skull of the common skunk (*Mephitis mephitica*) from North Bay, Ontario, the frontal bones of which each exhibited, close to the sagittal plane, a prominent swelling over which the bony tissue was so attenuated as to be easily crushed by the finger. The specimen was still in the flesh, and was preserved in formalin. Mr. Miller tells me that he finds these frontal enlargements in a large percentage of the skulls of both *Mephitis* and *Spilogale* from all localities. Merriam (Revision of the Genus Spilogale, N. A. Fauna, No. 4, p. 3, 1890) speaks of " large asymmetrical postorbital swellings resulting from the presence, in the frontal sinuses, of a worm-like endoparasitic arachnid of the genus *Pentastoma*," and on p. 4 of the same work, refers to "the large swellings produced by the worm-like parasite (*Pentastoma* or *Linguatula*) which infests the frontal sinuses of more than half the skulls examined." Bangs, in a Review of the Weasels of Eastern North America (Proc. Biol. Soc. Washington, Vol. X, p. 1, 1896) speaks of" the parasite that attacks the frontal sinuses of these animals as well as those of their relatives the skunks, mink, and otter." *Putorius noveboracensis* he says " suffers so much that it is hard to get perfect skulls." See also the figures of skulls in Merriam's Synopsis of the Weasels of North America (N. A. Fauna, No. 11, 1896).

The swellings in the frontal bones of the specimen of *Mephitis* submitted to me are caused by a nematode worm which in every particular agrees with *Filaroides mustelarum* van Beneden (Mém. s. l. Vers Intestinaux, p. 267, 1861), and I have no hesitancy in ascribing it to that species. Each of the swellings contained a nest of at least fifteen to twenty of the worms. The parasite is common in Europe, occurring in the air-passages of several species of Martins and Weasels. It has been described and figured in the frontal sinuses of *Mustela* by Weijenbergh (Arch. Néerlandaises, Tom. III, p. 428, 1868), and von Linstow (Arch. Naturg, Jahrg. 39, Bd. I, p. 300, 1873) has described it from the ethmoid and frontal bones of *Mustela* and *Putorius*. The parasite is always, directly or indirectly, connected with the respiratory system.

The object of this note is to call attention of the occurrence of *Filaroides mustelarum* in America, and to show that, without doubt, the swellings so common in the skulls of American skunks are caused by the presence of this nematode in the frontal sinuses; and that the prevalent frontal enlargements of other American Mustelidæ are probably due to the same parasite.—W. McM. Woodworth.

Museum of Comparative Zöology,
Cambridge, Mass., Jan. 21, 1897.

A Peculiar Appendage on the Thelycum of Penæus.[1]—A short preliminary note by Dr. Kishinouye undertakes to show that the leaf-like structure first described by Spence Bate in the Challenger report on the Macrura as an appendage of the secondary sexual organ of *Penœus* is not formed on the animal that bears it, but in the dilated end of the ductus ejaculatorius as a secretion, and that probably it is carried over to the female during copulation. It has no cellular structure whatever, and is found in a rolled-up condition in the ducts of the males.

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[1] The Zoological Magazine, Tokio, VIII, 59.

It was described by Spence in the Japanese variety of *P. canaliculatus,* and is to be found, though not so conspicuously, in *P. semisulcatus, P. curvirostris, P. monocerus?* and *P.* sp.— (The Japanese *mayebi*). Dr. Kishinouye's observations were made chiefly upon *P. canaliculatus* and *P. monoceros?*—F. C. K.

Nerve-endings in the rennet glands of the Vertebrate Stomach.[1]—The nerves spreading out over the serous membrane of the vertebrate stomach arise from the plexus of Meisner and form two other plexi—one under the rennet glands, the other below the ephithelium of the stomach. The simple nerve fibers form a plexus about the membrana propria of the glands and now and then pierce it, spreading their fine branches out around the cells. Each branch ends in a varicosity, but does not penetrate the cell as supposed by Nawalichin and some others. In this conclusion Dr. Kytmanow, the author of the paper cited, is in agreement with Erich Mueller, Smirnow, Arestein and others who have studied the peripheral or epithelial terminations of nerve fibers. His study upon the stomach of the cat was undertaken to determine surely what Erich Mueller had left as uncertain, namely, whether the fibers terminate inter- or intra-cellularly. For this he employed the Golgi, methylen blue and gold chloride methods. With the first he was unsuccessful, but with the other two, especially with the methylen blue, he arrived at the conclusion that has been given.—F. C. KENYON.

The Breeding Haunts of Ross' Gull.—One of the valuable ornithological facts that the "Hero of the White North," Nansen, has to relate, is that he has discovered the breeding station of the circumpolar gull, *Rhodostethia rosea* Macy. The small group of islands which he calls the Hirtenland group, where he found the birds in large numbers and breeding, lie in 81° 38′ N. Lat. and 63° E. Long. They seem to occupy a position within an area laid down by Payer as Wilczek land.

Proper name for the Western Horned Owl of North America.—In the "*Auk*" for April, 1896, p. 153 I published a revision of North American Horned Owls in which I showed that the name *subarcticus* Hoy. was a synonym of *arcticus* Swains, and hence untenable for the light colored *Bubo* of the western states.

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[1] Intern. Monatsch. Anat. Phys., XIII, 402–5.

In the same paper I proposed to recognize the small Bubo of southern California as a distinct subspecies under the name *pacificus* Cassin.

For the old "*subarcticus*" I proposed the name *occidentalis* and selected for my type a specimen from Mitchell Co., Iowa (No. 26435, Coll. Acad. Nat. Sciences, Phila.) which showed the greatest contrast to the small Californian race.

This specimen, however, unfortunately proves to be intermediate between *B. virginianus* and *arcticus* and does not belong to the race which I had intended to rename; the latter not extending so far east (See Auk., Jan., 1897, p. 132.)

Such being, the case my name "*occidentalis*" must be relegated to synonymy and I would propose for the Horned Owl of the interior United States (the "*subarcticus*" of authors, nec. Hoy) the name *pallescens*, designating as the type, No. 152219, Coll. U. S. Nat. Mus. ♂ Watson Ranch, 18 mi. S. W. of San Antonio, Texas.

Bubo virginianus pallescens is smaller and paler than the true *virginianus* (the wing measuring 13.75 in.) with much less rufous admixture. The barring on the belly is much finer and the feet almost pure white.

While not differing so much in size from *B. v. pacificus* as indicated in my former paper (Auk., 1896, p, 156), its coloration is quite distinct. The latter race is darker than *pallescens* with more black admixture above, heavier bars on the belly and with the feet more mottled with rufous and brown.

In entering *Bubo virginianus pacificus* Cass. in the Supplement to their Check List the American Ornithologists' Union Committee have added to the confusion by giving it the same number as has already been given to *B. v. saturatus.*

The various races of our Horned Owls should now stand as follows in the A. O. U. List:

375. *Bubo virginianus* (Gmelin). Great Horned Owl.
375a. *Bubo virginianus pallescens* Stone. Western Horned Owl.
375b. *Bubo virginianns arcticus* (Swainson). Arctic Horned Owl.
375c. *Bubo virginianus saturatus* Ridgway. Dusky Horned Owl.
375d. *Bubo virginianus pacificus* Cassin. Pacific Horned Owl.

—WITMER STONE, *Acad. Nat. Sci., Phila.*

An Incomplete List of the Mammals of Bertie Co., N. C.—During the years 1891, 1892 and 1893 we received a number of small mammals in the meat and in alcohol, from Bertie Co., N. C. The specimens came from that part of the county which lies a few miles west of the shore of Albemarle Sound, and about midway between the Tar and Chowan Rivers. Nothing larger than a Flying Squirrel was sent, hence the list is by no means a complete one, though it contains several records of interest. The following were the species obtained:

1. *Microtus pinetorum.*—One specimen, Jan. 22, 1891, and three in July, 1891. (*Microtus pennsylvanicus,* one of our commonest mice at Raleigh, was not obtained at all.)

2. *Peromyscus leucopus.*—Twenty-one specimens were received of this species, showing it to be the predominant Deer Mouse of the locality as against the next.

3. *Peromyscus gossypinus.*—Four specimens of this species were secured, one being in the bluish pelage of the young.

4. *Peromyscus aureolus.*—Thirty-seven specimens. The larger number received of this arboreal species was due to the ease with which they can be caught in their nests, when one once knows just where to look for the said nests.

5. *Reithrodontomys lecontei.*—Ten specimens of the Harvest Mouse were received. Like *P. leucopus* and *P. gossypinus* they were mostly caught in traps.

6. *Sciuropterus volans.*—Four adults and three young of the Flying Squirrel were received.

7. *Putorius noveboracensis.*—Two young Weasels, a male 265 mm. in total length, and a female 234 mm., were the only carnivora contained in the collection. Date of capture, May 16, 1892.

8. *Scalops aquaticus.*—Four specimens of the Common Mole were taken July 9, 1891; March 24 and April 22, 1892, and March 18, 1893.

9. *Blarina parva.*—Twelve specimens were dug out of an old stump on Jan. 21, 1892, and four others were also secured.

10. *Sorex longirostris.*—One specimen, collected June 13, 1892.

11. *Atalapha borealis.*—Thirty-six specimens of the Red Bat were obtained. This and the next are evidently the common bats of the locality.

12. *A. cinerea.*—Three specimens of the Hoary Bat were collected, one each on Oct. 10 and Nov. 1, 1892, and April 8, 1893.

13. *Nycticejus humeralis.*—Sixty-one specimens. Of twenty-seven specimens caught roosting in an old house on June 18 and July 1, 1891, all were females.

14. *Vesperugo carolinensis.*—Of this bat, one of the commonest at Raleigh, only six specimens were received.

15. *Adelonycteris fusca.*—Three specimens of the Large Brown Bat were secured, taken on Aug. 17, 1891, and March 7 and Nov. 9, 1893.

16. *Lasionycteris noctivagans.*—Six specimens of the Silver Black Bat were taken, four on July 1, 1891, and two (caught in a hollow tree) Dec. 26, 1892.

17. *Vespertilio lucifugus.*—Three specimens of the Little Brown Bat were taken, one each on July 9, 1891, Aug. 3, 1892, and July 17, 1893.

18. *Plecotus macrotus.*—Big-eared Bat. One specimen was taken on Feb. 1, 1893, and two on Oct. 24, 1894. This bat and *Atalapha cinerea* have also been taken at Weaverville, in the western part of the State, but not as yet here at Raleigh. The specimens were furnished to us by Messrs. Thos. A. Smithwick, of Walke, and J. W. P. Smithwick, of Sans Souci.—C. S. BRIMLEY.

Preliminary Description of a New Race of the Eastern Vole from Nova Scotia.—There is in Nova Scotia a small, bright-colored vole with small hands and slender feet that seems subspecifically distinct from the large dark-colored southern *Microtus pennsylvanicus typicus.*

It lives in great numbers in the fields and fresh water marshes, but especially in the glade-like openings in the spruce forest, where little spring brooks run down through the beds of rushes (*Juncus* sp.) among which its runways can be seen in all directions.

The new form, based on a series of sixty-three specimens, may be characterized as follows:

MICROTUS PENNSYLVANICUS ACADICUS subsp. nov. *Type* from Digby, Nova Scotia, No. 2155 ♀ old adult, Coll. of E. A. and O. Bangs. Collected by O. Bangs, July 22, 1894. Total length 172, tail vertebræ 49, hind-foot 20.

General Characters.—Size smaller than *M. pennsylvanicus typicus;* hands very small; feet slender; colors bright; skull smaller than that of *M. pennsylvanicus typicus* and lighter throughout; incisor teeth much more slender.

Color in winter pelage, upper parts bistre-brown, somewhat shaded with russet, with very few black-tipped hairs intermixed; under parts dark gray, often washed with buffy.

In summer pelage, upper parts with russet the predominating color. (At this season *M. pennsylvanicus acadicus* is much paler and brighter colored than *M. pennsylvanicus typicus.*)

Cranial Characters.—Skull smaller than that of *M. pennsylvanicus typicus* and lighter throughout: pattern of enamel folding of molar teeth similar; incisor teeth much more slender.

Size of skull (average measurements of ten old adult topotypes).—Basilar length 23.9, Basilar length of Hensel, 22.8, zygomatic breadth 14.7, mastoid breadth 11.8, greatest length of single half of mandible 15.6.

Size.—Average measurements of fifteen old adult specimens, males and females, from Digby, Nova Scotia, total length 167, tail vertebræ 45, hind-foot 20.3.

Remarks.—Compared with *Microtus frontigenus*, *M. pennsylvanicus acadicus* is larger and much more brightly colored, and has smaller audital bullæ.—OUTRAM BANGS.

A New Race of Gibb's Mole.—In his recently published Revision of the American Moles,[2] Mr. F. W. True treats Gibb's Mole, *Neürotrichus gibbsi* (Baird), from the whole coastal strip from British Columbia to San Francisco Bay as one form, although he points out the fact that Southern examples are larger than Northern ones. I have long considered the species to be made up of two well-defined and easily recognized races, for the Southern one of which I now propose the name:

NEÜROTRICHUS GIBBSI HYACINTHINUS subsp. nov. *Type* from Nicasio, Marin Co., Cal., ♀ old adult, No. 1240, Coll. of E. A. and O. Bangs. Collected by C. A. Allen, March 10, 1894. Total length 127, tail vertebræ 41.4, hind-foot 17.5.

General Characters.—Size considerably larger than *N. gibbsi typicus*; color uniform black, instead of deep brownish-plumbeous as in *N. gibbsi typicus*; skull larger and relatively broader.

Color.—Black all over, with in places green and purple irridescence; under fur black.

Cranial Characters.—Skull larger and relatively broader than that of *N. gibbsi typicus.*

Size of the type skull, Basilar length (basion to front of premaxilla) 19.8, mastoid breadth 11.4. (One of the largest skulls of *N. gibbsi typicus*, from a series of eighteen from Sumas, B. C., No. 5513, Bangs Coll., measures: Basilar lengih 18.4, mastoid breadth 10.2.)

Size.—Average measurements of two adult specimens from the type locality: total length 123.8, tail vertebræ 39.7, hind-foot 17. (The average measurements of the ten largest adult specimens of *N. gibbsi typicus*, from a series of eighteen from Sumas, B. C., are: total length 116.4, tail vertebræ 38.4, hind-foot 17.4.)

Remarks.—I am unable to say just where the two races of Gibb's Mole meet; but the San Francisco Bay specimens are very different from the British Columbia ones, and well warrant dividing the species into a small plumbeous Northern and a large black Southern race.

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[2] Proceedings U. S. Nat. Mus., Vol. XIX, No. 1101.

In the summer of 1896, Mr. Allan C. Brooks took a series of *N. gibbsi typicus* on Mount Baker, at the very edge of the perennial snow. He says these specimens do not differ in any way from those taken in the lowlands about Sumas, B. C.—Outram Bangs.

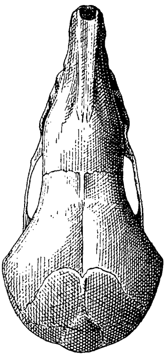

Fig. 1.

Fig. 1. *Neürotrichus gibbsi typicus* (No. 5513, Bangs Coll.) x $\frac{3}{2}$.

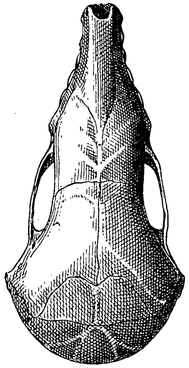

Fig. 2.

Fig. 2. *Neürotrichus gibbsi hyacinthinus* (Type) x $\frac{3}{2}$.

Zoological News. Protozoa.—Among the Protozoa described by Dr. C. A. Kofoid for the Traverse Bay region of Lake Michigan[3] there are 22 Rhizopoda, 5 Heliozoa, 20 Mastigophora, and 34 Infusoria. The close correspondence between the European and the American Protozoan fauna is shown in the fact that out of the 81 species that he lists 73 are also found in Europe. With two exceptions, *Podophrya cyclopum* and *Glenodinium cinctum,* every one of those that he records as limnetic species (i. e., those found in open water) are also found at Plön, as recorded by Zacharias.

Turbellaria.—Two new species of Turbellaria are described as *Phonaria simplex* and *Mesostomia wardii* respectively in Bulletin No. 6 of the Michigan Fish Commission.

Rotatoria.—In the same Bulletin, H. S. Jennings describes a new rotifer, *Distyla signifera.*

Mollusca.—In a list of the mollusks of Tennessee,[4] embracing 71 species of Pelecypoda, 41 being aquatic and 54 terrestrial Gasteropoda,

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[3] Bull. 6, Mich. Fish. Com.

[4] Contributions to the Zoology of Tennessee, No. 4, Mollusks. H. A. Pilsbry and S. N. Rhoads. Proc. Phil. Acad. Sci., 1896, p. 499.

I note the description of one new species, *Anculosa harpethensis* Pilsbry. It is distinguished from *A. subglobosa* Say. by its globular form and the angulation at the base of the columella; " face of columella concave, a projecting angle at union of columellar and basal lips."

MAMMALIA.—The mammals collected by Dr. A. Donaldson Smith during his expedition to Lake Rudolf, Africa, representing 50 genera and 77 species, 7 of which are new, have been described in the Proceedings of the Academy of Natural Science of Philadelphia (pp. 517–546) by Mr. S. N. Rhoads.

EMBRYOLOGY.[1]

Spinning Powers of Certain Eggs.—It is well known that the protoplasm of many one-celled animals may flow out as excessively delicate threads of living matter that exhibit remarkable currents and contractile phenomena. Something similar to these filose "pseudopodia" is met with in certain cells of many-celled animals, as in the pigment cells of the retina, etc. In a recent paper by Gwendolen Foulke Andrews[2] it is claimed that the eggs of star-fish and sea-urchins form very much the same sort of delicate pseudopodial filaments as are produced in those one-celled animals.

These thread-like processes are "spun" out from the protoplasm of the egg in such exceedingly delicate filaments that they have escaped notice and have now been revealed only with good lenses and exceptional optic resources.

From the elevation of the egg's surface that meets the sperm a " *tuft* " of fine threads is spun out; the whole surface of the eggs spins out fine threads to make the egg membrane; the egg spins during cleavage; it spins out the cilia that move the blastula; it spins filaments across the cleavage cavity and from one germ-layer to another in the gastrula; and the polar bodies spin like the rest of the egg.

These threads spun out are flowing material that branches, anastomoses, shows currents and other phenomena very much as do the pseudopodial filaments of such one-celled animals as Gromia.

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[1] Edited by E. A. Andrews, Baltimore, Md., to whom abstracts, reviews and preliminary notes may be sent.

[2] Journal of Morphology. February, 1897, pps. 367–389.